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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER MICHALSKI, JUSTIN I	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/603,939		Applicant(s) GRAUMANN, DAVID L.	
	Examiner Justin Michalski		Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 28 March 2006.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-20 and 30-36 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-20 and 30-36 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 28 March 2006 have been fully considered but they are not persuasive.

Applicant argues regards regarding Claims 30-36, on page 9, lines 3-14, that Best et al. does not disclose generating a masking signal that falls entirely within one portion of the range of frequencies or generating a data signal that falls entirely within the range of frequencies and apart from the one portion. This is not persuasive as Best et al. discloses generating a masking signal (signals from filters 10 and 11 in a frequency range of 1KHz to 6KHz) that falls entirely within one portion of the range of frequencies (the frequency range of 1Kz to 6KHz will fall entirely within the frequencies of notch filter of 2883Hz, i.e. one portion of the of the range of frequencies) and generating a data signal that falls entirely within the range of frequencies and apart from the one portion (Filter 16 produces a data signal by band pass filter 16 which is apart from the one portion around 2883 Hz).

Applicant further argues page 10 that Best et al. Fig. 4 does not disclose filter the data signal in the frequency range from the masking signal. This is not persuasive as Fig. 4 discloses filtering after band-pass filter of 3417 Hz and is inherent that filtering after band-pass filter of 3417Hz must filter the data signal in order to produce a data signal (Fig. 4, DATA output) which is free of noise in order to produce a useable output.

Applicant further argues page 10, regarding claims 1-6 and 9-17 that there is no motivation to combine Best et al. and Neubauer et al. This is not persuasive as Best

and Neubauer relate to extracting data from an audio signal. Best discloses the notch filters facilitate increment of data at frequencies to ensure that no music breaks through into the decoding circuits (Col. 2, lines 17-31). As stated in the rejection it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove a frequency band around a carrier signal in order to insert coded data in a way to ensure that no music breaks through into the decoding circuits.

Applicant further argues page 11 and 12 regarding Claims 7, 8, and 18-20 that Neubauer does not disclose isolating the modulated carrier signal from the audio signal. This is not persuasive as Neubauer disclose Fig. 4 blocks 402-412 which extract the data from the input signal containing modulated data (Col. 13, lines 5-14).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 30-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Best et al. "Best" (US Patent 4,876,617).

Regarding Claim 30, Best discloses a method to generate an output audio signal, comprising: removing a range of frequencies in an audio signal to produce a notched audio signal (Fig. 1); generating a masking signal (signals from filters 10 and 11 in a frequency range of 1KHz to 6KHz) that falls entirely within one portion of the range of

frequencies (the frequency range of 1Kz to 6KHz will fall entirely within the frequencies of notch filter of 2883Hz, i.e. one portion of the of the range of frequencies) and generating a data signal that falls entirely within the range of frequencies and apart from the one portion (Filter 16 produces a data signal by band pass filter 16 which is apart from the one portion around 2883 Hz); and combining the notched audio signal, the masking signal, and the data signal for form the output audio signal (Audio O/P).

Regarding Claim 31, Best further discloses transmitting the output audio signal (Audio O/P).

Regarding Claim 22, Best further discloses the masking signal falls within a critical band of the data signals (bands of notch filters).

Regarding Claim 34, Best further discloses a method of processing a combined audio signal, comprising: receiving the combined audio signal including a masking signal residing in a frequency range (Fig. 4, Audio I/P), a data signal residing in the frequency range, and audio information residing outside the frequency range; separating the masking signal and the data signal in the frequency range from the audio information outside the frequency range; and filtering the data signal in the frequency range from the masking signal (Figs. 4-6).

Regarding Claim 35, Best further discloses the masking signal resides in the first portion of the frequency range (1KHz to 6KHz) that is distinct from a second portion of the frequency range in which the data signal resides (bands at 2883Hz and 3417Hz).

Regarding Claim 36, Best further discloses decoding or demodulating the data signal after the filtering to extract data from the data signal (Fig. 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 5, 9, 10, 12, 13, 16, and 17, are rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer et al. (US Patent 6,584,138) in view of Best et al. (US Patent 4,876,617).

Regarding Claims 1 and 9, Neubauer discloses a method and apparatus for generating an enhanced acoustic transmission signal (Fig. 1), the method and system comprising: generating a carrier signal ($\cos \omega_c t$); receiving data and generating a data signal representing the data (104); modulating the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency (modulator 110); generating a masking signal to mask the modulated carrier signal from being audible by a human ear (106); receiving audio and generating an audio signal based on the audio (Input to 100); and combining the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal (112). Neubauer does not disclose removing a frequency bands surrounding the carrier frequency from the audio signal. Best discloses a notch filter to remove a portion of an audio signal and insert data (Fig. 1, notch filters). Best discloses the notch filters facilitate increment of data at frequencies to ensure that no music breaks through into the decoding circuits (Col. 2, lines 17-31).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove a frequency band around a carrier signal in order to insert coded data in a way to ensure that no music breaks through into the decoding circuits.

Regarding Claims 2 and 10, Neubauer discloses the carrier signal is a sine wave ($\cos \omega_T t$).

Regarding Claims 4 and 12, Neubauer discloses the masking signal is narrowband random noise (Col 10, lines 61-64).

Regarding Claims 5 and 13, Neubauer discloses the modulated carrier signal is at a level that is detectable by a decoding system while still being masked by the masking signal (Col. 1, lines 59-64).

Regarding Claim 16, Neubauer further discloses the modulated carrier signal and the masking signal are first combined to form a masked encoded signal (Fig. 1, output of 110), then the audio signal is combined with the masked encoded signal to form the enhanced acoustic transmission signal (112).

Regarding Claim 17, Neubauer further discloses the modulated carrier signal, the masking signal, and the audio signals are combined simultaneously to form the enhanced acoustic transmission signal (112).

6. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer/Best as applied to claims 1 and 15 above in view of Boney et al. ("Boney")

(1996 IEEE International Conference on Multimedia Computing and Systems, Jun. 17-23, Hiroshima, Japan; Laurence Boney et al.; "Digital Watermarks for Audio Signals", pp 473-480.).

Neubauer discloses a method and system as stated apropos of claims 1 and 15 above but does not disclose the masking signal has a bandwidth less than one critical band of the modulated carrier signal. Boney also discloses inband coding of data in an audio signal and teaches that the critical bands are defined around a center frequency in which the noise bandwidth is increased until there is just noticeable difference in the tone at the center frequency. Thus if a faint tone lies in the critical band of a louder tone, the faint tone will not be perceptible (pg. 475, Col.1, first paragraph under heading 2.2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a masking signal bandwidth less than one critical band of the carrier signal in order to prevent the masking signal from being perceptible as taught by Boney.

Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer/Best as applied to claim 9 above in view of Boney et al. ("Boney") (1996 IEEE International Conference on Multimedia Computing and Systems, Jun. 17-23, Hiroshima, Japan; Laurence Boney et al.; "Digital Watermarks for Audio Signals", pp 473-480.). Neubauer discloses a method and system as stated apropos of claims 9 and 18 above including a microphone to receive audio (Fig. 4, microphone 400) and a data input device (Fig. 1, 104). Neubauer does not disclose the system is a telephone

system. Boney also discloses inband coding of data in an audio signal and telephone speech signals from 50-7000 Hz. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system as disclosed by Neubauer over a telephone system to transmit audio and data signals over a distance.

7. Claims 3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer/Best as applied to claims 2 and 10 above in view of Bassani et al. ("Bassani") (US Patent 4,035,838). Neubauer discloses a system and method as stated apropos of claim 2 and 10 but does not disclose the carrier signal being a pulsed wave. It is well known in the art that variety of modulation techniques can be used to modulate signals including pulse-modulation. Bassani discloses pulse modulation to transmit data over a carrier wave (Fig. 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use pulse modulation to transmit data over a signal.

8. Claims 7, 8, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer.

Regarding Claims 7 and 18, Neubauer a method and system of decoding an enhanced acoustic transmission signal including a modulated carrier signal formed by modulating a carrier signal at a carrier frequency with a data signal representing data, a masking signal adapted to mask the modulated carrier signal from being audible by a

human ear, and an audio signal modified so that a frequency band surrounding the carrier frequency is removed from the audio signal, the method and system comprising: receiving the enhanced acoustic transmission signal (Fig. 4, 400); filtering the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal (filter 402, Col. 13, lines 5-11); demodulating the modulated carrier signal to extract the data signal from the modulated carrier signal (Although Neubauer does not explicitly disclose demodulation of the carrier signal, Neubauer discloses the data modulated on the signal to be decoded, col. 13, lines 9-11. Neubauer further discloses the signal to be decoded passing through blocks 404, 406, 408, 410, and decoder 412 to produce the decoded signal. It is inherent that demodulation will take place in order to take the data modulated a signal and produce a pure data signal that is output from decoder 412); and decoding the data signal to extract the data (412). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that a demodulator could be used to demodulate a data signal modulated on a carrier in order to decode and output a pure data signal as taught by Neubauer.

Regarding Claims 8 and 19, Neubauer further discloses the modulated carrier signal is isolated from the masking signal by using a finite impulse filter (FIR filter 408).

9. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neubauer as applied to claims 18 above in view of Boney et al. ("Boney") (1996 IEEE International Conference on Multimedia Computing and Systems, Jun. 17-23,

Hiroshima, Japan; Laurence Boney et al.; "Digital Watermarks for Audio Signals", pp 473-480.). Neubauer discloses a method and system as stated apropos of claims 9 and 18 above including a microphone to receive audio (Fig. 4, microphone 400) and a data input device (Fig. 1, 104). Neubauer does not disclose the system is a telephone system. Boney also discloses inband coding of data in an audio signal and telephone speech signals from 50-7000 Hz. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system as disclosed by Neubauer over a telephone system to transmit audio and data signals over a distance.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (571)272-7524. The examiner can normally be reached on M-F 7-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JIM


June 1, 2006


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600